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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,818	06/30/2000	Jiann H. Chen	81326D-W	2410

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EXAMINER	
TSOY, ELENA	

ART UNIT	PAPER NUMBER
1762	5

DATE MAILED: 07/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/608,818	Applicant(s) CHEN ET AL
	Examiner Elena Tsoy	Art Unit 1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Amendment

1. Amendment filed on June 3, 2002 has been entered.

Claim Objections

2. Objection to claim 4 due to the informalities has been withdrawn.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Rejection of claims 4, 10 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been withdrawn.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 1-20** stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hartley et al (US 4,853,737) and incorporated by reference Lentz (US 4,257,699) in view of Schlueter, Jr. et al (US 5,995,796) for the reasons of record as set forth in Paragraph No. 5 of the Office Action mailed on March 5, 2002 (Paper No. 3).

7. **Claims 1-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartley et al (US 4,853,737) in view of Schlueter, Jr. et al (US 5,995,796) and Blong et al (US 5,549,948).

As to claims 1, 21, 22, Hartley et al disclose a method of making a fuser member having a support comprising the steps:

A) providing a support (See column 8, lines 9-12);

B) coating onto the support an organic solvent-based coating composition (See column 8, lines 4-6) comprising a fluorocarbon random copolymer of vinylidene fluoride with hexafluoropropylene and tetrafluoroethylene (THV) having subunits of $-(CH_2CF_2)x-$, $-(CF_2CF(CF_3)y-$, $-(CF_2CF_2)z-$ (See column 2, lines 38-44, 56-66) such as commercially available Viton B wherein x = 61 %, about y = 17 % and z = 22 %, as evidenced by US 5,017,432 (See column 6, lines 4-6), a curing agent having a bisphenol residue (See column 3, lines 5-11), a particulate filler containing a combination of (See column 6, lines 51-52) metal oxides such as zinc oxide, antimony oxide, tin oxide (See column 6, lines 42-53) and aminosiloxane (See column 2, lines 48-50; column 5, lines 27-46); and

C) curing said layer of the coating composition on said support for 12-24 hours at temperature in the range of 20^0C to 230^0C and then post curing at 232^0C for 24 hours (See column 8, lines 26-33).

As to antimony doped tin oxide, Hartley et al fail to teach that the metal oxide combination contains antimony doped tin oxide.

Schlueter, Jr. et al teach that antimony doped tin oxides (optionally in a combination with other metal oxides such as zinc oxide (See column 4, lines 57-67; column 12, lines 4, 8)) added to a fluoroelastomer/aminosiloxane copolymer allows for a stable resistivity virtually unaffected by

changes in relative humidity and temperature and provides optimal conductivity (See column 10, lines 25, 40-68) for the filled copolymer (See column 4, lines 1-67; column 5, lines 1-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used antimony doped tin oxides in a combination with zinc oxide for filling a fluoroelastomer/aminosiloxane copolymer of Hartley et al with the expectation of providing the desired stable resistivity and optimal conductivity, as taught by Schueter, Jr. et al.

As to curing of the coating composition being performed at temperature from 20^0C to 120^0C for 5-10 hours, combination of Hartley et al and Schueter, Jr. et al fails to teach that curing of the coating composition is performed at temperature from 20^0C to 120^0C for 5-10 hours.

Blong et al teach that a relatively new class of thermoplastic, chemically resistant, thermally stable, low permeable terpolymers of tetrafluoroethylene, hexafluoropropylene, and vinylidene fluoride comonomers combined in different ratios to get a range of different melting points (THV fluoropolymers) is commercially available and sold as a series or family of "3M THV Fluoroplastics" by the 3M Company. These fluoropolymers are more flexible and can be melt-processed at lower temperatures than most other fluoroplastics (See column 1, lines 34-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used as THV fluoroelastomers of a release layer of combination of Hartley et al and Schlueter, Jr. et al a commercially available series or family of thermoplastic "3M THV Fluoroplastics" comprising tetrafluoroethylene, hexafluoropropylene, and vinylidene fluoride comonomers combined in different ratios, with the expectation of providing the release layer with the desired chemical resistance, thermal stability, low permeability as well with a range of different melting points, as taught by Blong et al depending on the particular application.

One of ordinary skill in the art would know that curing temperature and time depend on components used and the amount of the components in a coating composition. Therefore, temperature and time for curing a coating composition of combination of Hartley et al and Schueter, Jr. et al would depend on particular THV fluroelastomer used and the amount of zinc and antimony-doped tin oxides, aminosiloxanes and bisphenol containing curing agent. It is held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by routine experimentation the optimum curing temperature and time (including claimed 20^0C to 120^0C for 5-10 hours) of an organic solvent-based coating composition of combination of Hartley et al and Schlueter, Jr. et al depending on particular THV fluroelastomer used and the amount of zinc and antimony-doped tin oxides, aminosiloxanes and bisphenol containing curing agent.

As to claim 2, Hartley et al further teach that aminosiloxane is amino functional polydimethyl siloxane copolymer. See column 5, lines 27-45.

As to claim 3, Hartley et al further teach that amino functional unit of polydimethyl siloxane copolymer is (aminoisopropyl)methyl (See column 5, lines 42-46) or aminopropyl (See column 11, lines 5-6).

It is held that compounds which are position isomers (compounds having the same radicals in physically different positions on the same nucleus) or homologs (compounds differing regularly by the successive addition of the same chemical group, e.g., by -CH2- groups) are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds

possess similar properties. In re Wilder, 563 F.2d 457, 195 USPQ 426 (CCPA 1977). See also In re May, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978) (stereoisomers prima facie obvious). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted (aminoisopropyl)methyl of Hartley et al with its position isomer (aminopropyl)methyl with the expectation of maintaining the desired benefits since a presumed expectation that both compounds possess similar properties.

As to claims 4-6, Hartley et al further teach that aminosiloxane has total concentration in a coated layer of 1-15 percent. See column 5, lines 60-68; column 6, lines 1-8.

As to claims 7, 8, Hartley et al further teach that a mixture of fillers containing zinc oxide has total concentration of 10-100 weight percent based on weight of the cured fluoroelasomer. See column 6, lines 3-8, 45-46.

As to claim 9, Hartley et al further teach that the fluoroelasomer is cured by bisphenol curing agent. See column 3, lines 5-55.

As to claim 10, Hartley et al further teach that the fuser member may optionally contain resilient layers (a cushion layer) between a core and a coating layer. See column 8, lines 9-19.

As to claim 11, Hartley et al further teach that the fluoroelasomer is nucleophilic addition cured. See column 3, lines 5-15.

As to claims 12-14, Blong et al further teach that THV fluoroelastomers have x = 10-45 wt %, y = 10-30 wt % and z = 30-70 wt %. See column 2, lines 55-67; column 3, lines 1-5.

As to claims 15, 16, Schlueter, Jr. et al further teach that antimony doped tin oxide having 6.5 weight percent of antimony is added to a fluoroelastomer/aminosiloxane copolymer in an amount 5-65 weight percent of total solids. See column 11, lines 49, 57-65.

As to claims 17-20, Combination of Hartley et al, Schlueter, Jr. et al and Blong et al Hartley et al fails to teach that the fluorocarbon thermoplastic random copolymer comprises a fluorinated resin (Claim 17); the fluorinated resin having a number average molecular weight of 50,000-50,000,000 (Claim 18); the ratio of the fluorocarbon thermoplastic random copolymer to the fluorinated resin is between 1:1 to 50:1 (Claim 19); the fluorinated resin is polytetrafluoroethylene (PTFE) or fluoroethylenepropylene (Claim 20).

It is well known in the art that that some toners could be fixed only at high temperatures that would require high heat stability of a fuser member. It is also well known in the art that addition of PTFE to the thermoplastic fluoroelastomer would increase heat stability of the resulting mixture but decrease flexibility. Therefore, amount of PTFE in the mixture is result-effective variable in a method of making the fuser member. It is held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by routine experimentation the optimum amount of PTFE (including claimed ratio between 1:1 to 50:1) in a mixture with fluoroelastomer depending on toner to be fixed.

Response to Arguments

8. Applicants' arguments filed June 3, 2002 have been fully considered but they are not persuasive.

(A) Applicants argue that three cited references of Hartley et al, Lentz and Schlueter, Jr. et al, all teach fuser rolls containing release layers from cured fluoroelastomers, for example VITON elastomers, which have relatively high surface energies, which causes them to have less than optimum toner release properties and higher curing temperatures *by contrast* to fuser member having claimed release layer formed from a coating composition comprising a fluorocarbon thermoplastic random copolymer having subunits of $-(CH_2CF_2)x-$, $-(CF_2CF(CF_3)y-$, $-(CF_2CF_2)z-$ commercially available under the designation "THV Fluoroplastics". Also the addition of zink oxde and aminosiloxane to fluorocarbon thermoplastic random copolymers improves toner release.

The Examiner respectfully disagrees with this argument.

As to a release layer of a fuser roll of combination Hartley et al, Lentz and Schlueter, Jr. et al being in *contrast* to fuser member having claimed release layer formed from a coating composition comprising a fluorocarbon thermoplastic random copolymer having subunits of $-(CH_2CF_2)x-$, $-(CF_2CF(CF_3)y-$, $-(CF_2CF_2)z-$ commercially available under the designation "THV Fluoroplastics", a release layer of a fuser roll of combination Hartley et al, Lentz and Schlueter, Jr. et al is formed from a coating composition comprising the same components such as *non-cured* fluorocarbon thermoplastic random copolymer having the same THV subunits of $-(CH_2CF_2)x-$, $-(CF_2CF(CF_3)y-$, $-(CF_2CF_2)z-$ (See Hartley et al, column 2, lines 41-42, 58-60), such as commercially available THV fluoroelastomers (fluoroplastics) under the designation VITON or FLUOREL of 3M Company (See Lentz column 9, lines 1-7) having x, y, z in the claimed range, and a curing agent having a bisphenol residue. Also Hartley et al and Lentz teach that the addition of zink oxide and aminosiloxane to fluorocarbon thermoplastic random copolymers improves toner release (See Hartley et al, column 4, lines 41-49). Therefore, there is

no contrast between claimed coating composition and composition of Hartley et al, Lentz and Schlueter, Jr. et al.

As to the *high* curing temperature of a coating composition of combination Hartley et al, Lentz and Schlueter, Jr. et al, Hartley et al, Lentz and Schlueter, Jr. et al, as described above, teach that the coating composition comprises *any* THV fluoroelastomers (See Hartley et al, column 2, lines 39-44, 58-66) such as commercially available VITON or FLUOREL of 3M Company (See Lentz column 9, lines 1-7), both having x, y, z in the claimed range. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used *other* commercially available thermoplastic THV fluoroelastomers, e.g. series of family of fluoroelastomers sold as "3M THV Fluoroplastics", including THV 200A, not just VITON or FLUOREL, since Hartley et al and Lentz teach that *any* THV fluoroelastomers can be used in the coating composition. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a coating composition of combination Hartley et al, Lentz and Schlueter, Jr. et al by mixing any of the series of "3M THV Fluoroplastics", such as THV 200A, together with polytetrafluoroethylene, as taught by Lentz (See column 9, lines 5-6), aminosiloxane, zinc oxide, antimony-doped tin oxide, a curing agent having bisphenol residue and methylethylketone, which would have a low curing temperature, as shown in an examples 1-3 of specification (See page 16, lines 27+).

(B) Applicants argue that Hartley et al do not teach or suggest the claimed invention since teach optimum combination of metal oxides and concentrations thereof for enhancing release properties of cured fluoroelastomers not for lowering curing temperature of the fluoroelastomer layer, as provided by claimed invention.

In response to applicant's argument that Applicant obtained result not contemplated by prior art, it is held that the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

9. The prior art made of record and not relied upon is considered pertinent to applicant disclosure.

Effenberger et al (US 5,194,335)) teach the addition of a THV fluoroelastomer to PTFE or PEF for preventing cracking and enhancing flexibility (See column 1, lines 14-25; column 3, lines 9-29; column 4, lines 10-13).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (703) 605-1171. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

ET

Elena Tsoy
Examiner
Art Unit 1762

July 8, 2002

SHRIVE P. BECK
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